

ISDN NT1 1010

User's Guide

1010PA ISDN Network
Termination Unit

Document #5000258



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Preface

This manual explains how to install, power up, and configure the 1010PA ISDN Network Termination Unit.

Who is this manual for?

This manual is for the person installing an ISDN NT1 unit. It contains everything an installer needs to know to power on the unit and confirm that it is functioning correctly.

Important safety information



This symbol on the product alerts the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

This equipment has been designed to the highest quality standards of materials, workmanship and safety. Do not bypass any of the safety features of this equipment or operate it in an improper environment.



WARNING!

To avoid hazard from electrical shock and/or fire, adhere to the safety practices listed in this section and identified within the instructions of this document.

Use normal caution when installing or modifying telephone lines. Dangerous voltages may be present.

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line is disconnected at the network interface. Always disconnect all telephone lines at the network interface, and power connections from the wall outlets before servicing or disassembling this equipment.

All wiring external to the product(s) should follow the provisions of the current edition of the National Electrical Code or any national wiring rules that apply.



WARNING!

Potentially hazardous voltages inside. Service should be performed only by qualified personnel.



CAUTION!

For continued protection against risk of fire, replace only with same type and rating of fuse "F1", located on printed circuited wiring board.
125V, 1.5A.

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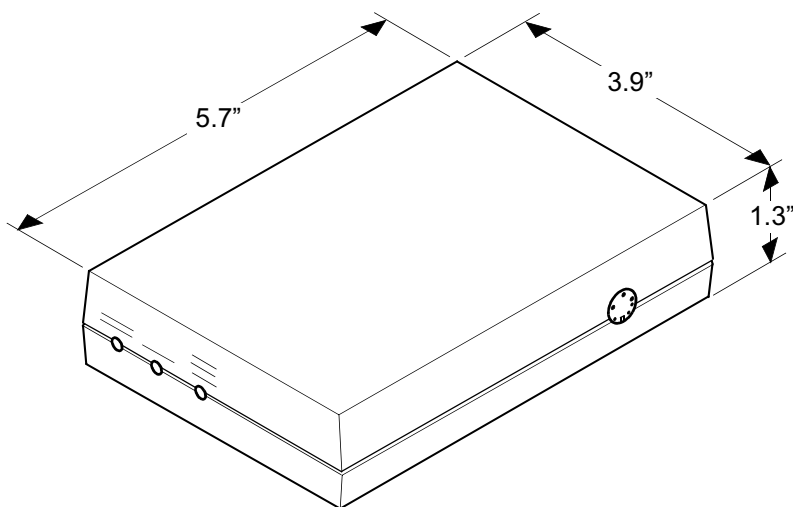
Introduction

The 1010 is a compact, versatile, and affordable Network Termination 1 (NT1) device. The 1010 is used for connecting Integrated Services Digital Network (ISDN) voice or data Terminal Equipment (TE) to the ISDN line provided by the telephone company.

The NT1 is pictured in Figure 1. Three LEDs on the front panel indicate the status of the power, the S/T & U interfaces, and Central Office (CO) loopback testing.

This installation guide describes how to install the 1010 for use with ISDN TE(s). The 1010 may be mounted on a wall or simply placed on a desktop.

Figure 1—1010 NT1 physical dimensions



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Setting up your hardware

Taking inventory

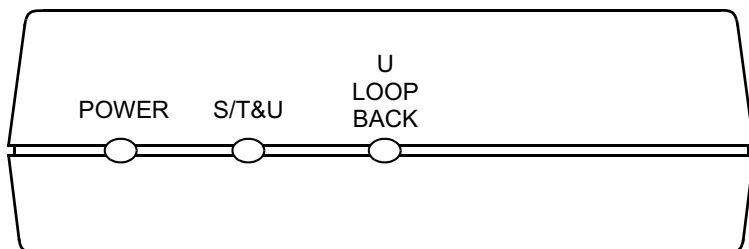
The 1010 package contains the following items:

- One 1010 unit
- One RJ11 to RJ45 cable
- One RJ45 to RJ45 cable
- One power supply unit (AD62010)
- One plastic wall mount bracket
- Two jumpers
- Two screws and two plastic anchors for wall mounting
- User's Guide
- One warranty card

Front panel LEDs

There are three (3) LEDs on the front panel of the 1010.

Figure 2—1010 NT1 front panel

**Power LED**

When the 1010 is plugged into the wall outlet, the POWER LED will be on.

S/T&U LED

The S/T&U LED will flash for a few seconds when the 1010 is first powered on. This LED will then go off, provided that the S/T & U interfaces are working properly.

- a** If there is no ISDN line connected to the U-interface or the line is not activated, then the S/T&U LED will be on continuously.
- b** If the U-interface is detected, but is not in sync., the S/T&U LED will flash eight times per second. In this case, the S/T device will not work until sync. is restored on the U-interface.
- c** If the U-interface is in sync., but the S/T-interface is not, then the S/T&U LED will flash once per second. There must be an S/T device connected to the S/T-interface before this light will go off.
- d** Once both the S/T- and U-interfaces are in sync., the S/T&U LED will go off.

Loopback LED

The U LOOP BACK LED will light only during a telephone company full "2B+D" loopback test. The ISDN line will not be available until this testing is completed.

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Installing your unit

Rear panel

- 1 The 1010 rear panel (see Figure 3) has three RJ45 connectors, two for the S/T-interface and one for the U-interface.
- 2 The two RJ45 connectors for the S/T interface, located on the left side of the rear panel, are connected in parallel internally. When one RJ45 connector is being used, the maximum range is 3,300 feet (1,000 meters). When both RJ45 connectors are being used, the total range on both shall not exceed 660 feet (200 meters). The RJ45 pin connector assignments for the S/T interface are shown in Table 1.

Figure 3—1010 NT1 rear panel

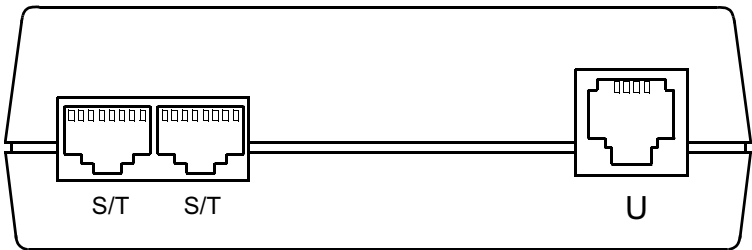


Table 1—S/T interface (RJ45) connector pin assignments

Pin	Function	Pin	Function
1	—	2	—
3	RX +	4	TX +
6	RX -	5	TX -
7	-40 VDC	8	GND

Table 2—U interface pin assignments

Pin	Function	Pin	Function
1	—	2	—
3	—	4	TIP
5	RING	6	—
7	—	8	—

Power connector

The 4-pin mini DIN power connector is located on the side of the 1010. This design will prevent the weight of the 1010 power adapter from accidentally pulling off, when the 1010 is wall mounted. The power connector pin assignments are shown in Table 3.

Table 3—Power connector pin assignments

Pin	Function	Pin	Function
1	+9 VDC	2	- 40 VDC
3	GND for 9V	4	GND for -40V

DIP switch setting

A block of four DIP switches is located on the bottom of the 1010. Use the DIP switches to configure the 1010 according to the settings shown in Table 4. For S/T wiring configuration, please refer to Chapter 4.

Table 4—Dip switch pin assignments

Switch	Function	On	Off
1, 2	S/T - termination	Yes *	No
3	Bus timing mode	Short passive bus	Point-to-point, or extended passive bus
4	Spare	N/A *	N/A

* = default setting

Internal jumper settings

The 1010 is shipped with 100Ω Termination Resistance (TR). This TR is added to the S/T bus when dip switches 1 & 2 are set to the on position. If the installed S/T bus ISDN CPE provides 100Ω TR, dip switches 1 & 2 should be set to the off position to provide 0Ω. When the ISDN CPE provides 50Ω, the 1010 needs to be adjusted to provide the other 50Ω, instead of its default of 100Ω. Changing the 1010 TR is done through an internal jumper. Following is the procedure to change the internal jumper.



WARNING!
Always disconnect all telephone lines at the network interface, and power connections from the wall outlets before servicing or disassembling this equipment.

- 1 To open the 1010, remove the four corner screws from the bottom of the 1010.
- 2 On the component side of the printed circuit board, locate JP3 & JP4 (in the middle of the board). Table 5 shows the setting of the dip switch 1 & 2 for different Termination Resistance settings.

Table 5—Jumper setting for termination resistance

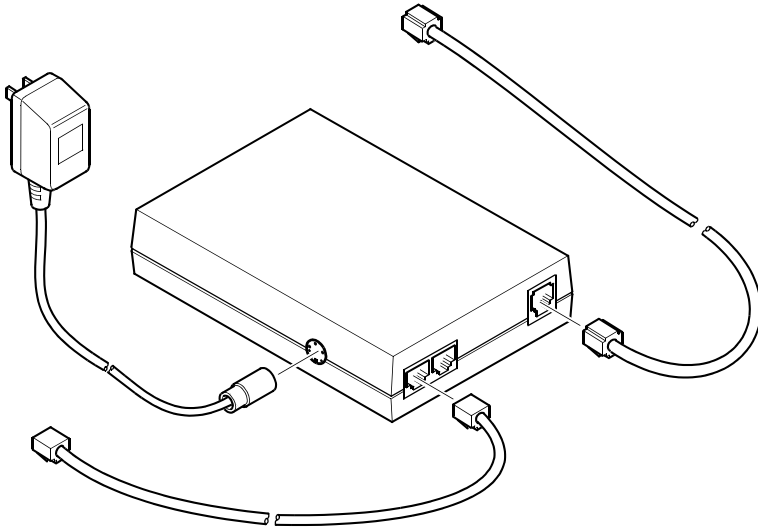
Dip Switch 1 & 2	JP3 & JP4 not jumpered	JP3 & JP4 jumpered
ON *	100 ohms *	50 ohms
OFF	0 ohm	0 ohm

* factory default

Wiring instructions

Figure 4 shows the wiring diagram of the 1010 with the ISDN Customer Premise Equipment (CPE) and the Line Termination (LT). Follow the instructions given below to set up the 1010:

Figure 4—Wiring diagram



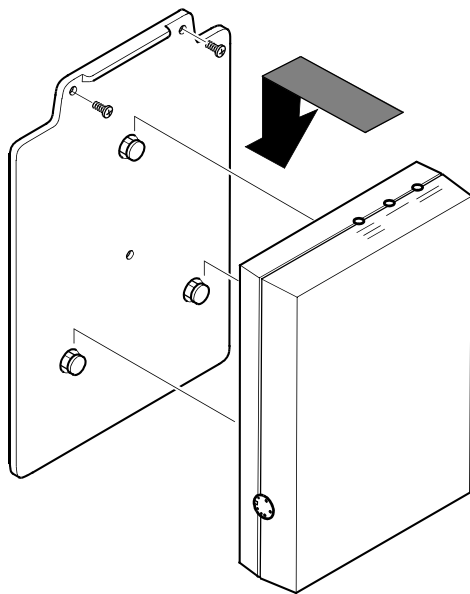
- 1 Adjust the DIP switches for the desired S/T wiring setup (see Table 4).
- 2 Connect the DC power plug of the AD62010 to the power connector on the side of the 1010.
- 3 Plug the AD62010 into the AC power outlet. The POWER LED will light and the S/T&U LED will light or flash depending on the line status.
- 4 Connect one end of the RJ45 cable into the U-interface connector on the 1010. The other end goes into the U-interface wall outlet.
- 5 Switch on the power to the ISDN terminal equipment. Connect one end of the RJ45 cable provided, to one of the S/T connectors on the 1010, and connect the other end to the ISDN TE.
- 6 If a second ISDN TE will be used, repeat step 5 to connect the second terminal to the second S/T connector.
- 7 The S/T&U LED may begin to flash for a few seconds. The LED will go off when the communication paths have linked. When the LED goes off, the ISDN CPE is ready for communication.

Wall mounting instructions

To mount the 1010 on a wall, follow these instructions.

- 1 Drill two holes in the wall corresponding to the holes on the wall mount bracket provided with the 1010.
- 2 Insert the plastic wall anchors into the wall holes, using a hammer if necessary.
- 3 Align the bracket with the anchors, and use the screws provided to mount the bracket on the wall.
- 4 Align the holes on the back of the 1010, with the hooks on the wall mount bracket.
- 5 Press the 1010 gently but firmly onto the mounting bracket. Then slide the 1010 down gently until it hooks onto the bracket and locks into position.

Figure 5—Wall mounting



Power source

Use the 1010 only with power adapter model AD62010. The power adapter supplies power to the NT1 only.

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S/T bus configuration

The 1010's dip switch settings relate to the five possible configurations of the S/T bus. The 1010 allows the user to adjust the S/T bus Termination Resistance (TR) and S/T bus timing.

Figure 6—End of Passive Bus (P-P)

DIP SWITCHES

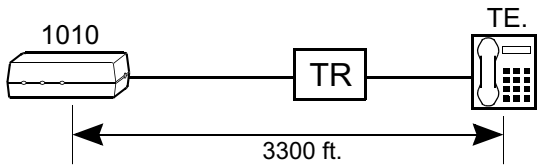
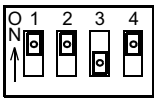


Figure 7—Short Passive Bus (Point-to-Multipoint)

DIP SWITCHES

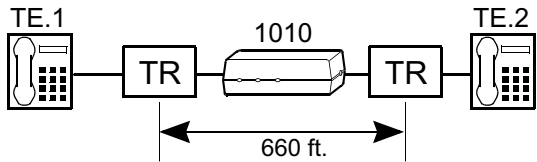
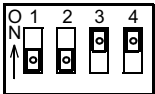


Figure 8—Short Passive Bus (Linear)

DIP SWITCHES

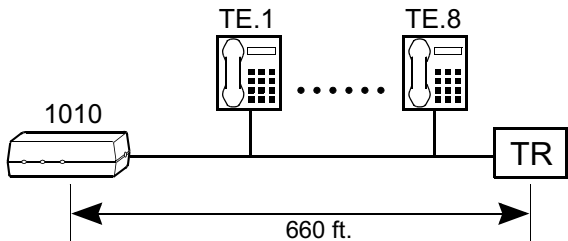
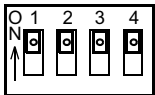


Figure 9—Extended Passive Bus (Cluster Multipoint)

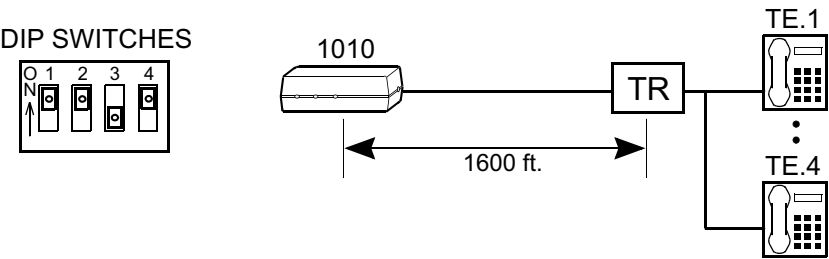
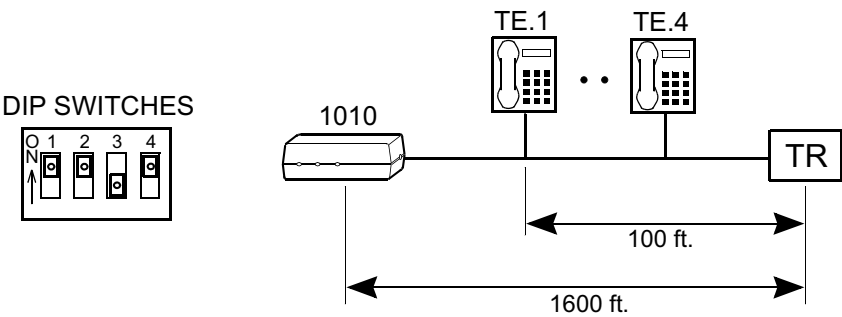


Figure 10—Extended Passive Bus (Linear)



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Specifications

Table 6—Specifications

Parameter	Specification
Physical	Height - 1.3" Width - 3.9" Depth - 5.7" Weight - 1.0 lb.
Environment	Complies with AT&T Pub. 62310.
Operating temperature	0°C to 60°C (32°F to 140°F)
Storage temperature	-25°C to 60°C (-13°F to 140°F)
Relative humidity	0% to 95% noncondensing
Power	+7.5 VDC with 1W dissipation Provides automatic lightning and surge protection for the S/T and U interfaces
Power adapter option	Provides power to the NT1 only
Network Interface	Automatic ANSI maintenance functions
Line	Two-wire, full duplex
Data rate	144 kbps available to customer
Line code	2B1Q per ANSI T1.601, 1992
O/P amplitude	2.5V, zero-to-peak
Connector	One RJ45 or one RJ11

Table 6—Specifications

Parameter	Specification
Terminal S/T interface	Supports point-to-point and multipoint Conforms to ANSI T1.605, 1991-TX source impedance, RX impedance, receive sensitivity
Line	Four-wire, full duplex
Data rate	144 kbps available to customer
Line code	AMI, 100% duty cycle
O/P amplitude	0.75V, zero-to-peak
Connector	Two RJ45
DIP switches	S/T interface termination S/T bus timing mode
LED indicators	Front panel power status lamp S/T and U line error status lamp U loopback status lamp
Mounting Options	Standalone desktop or wall mount
Regulatory	FCC part 15, Class B approval UL 1459 approval DOC CS03 approval CUL CSA-235 approval

FCC compliance information

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions: 1) This device may not cause harmful interference, and 2) this device must accept any interference received, including interference that may cause undesired operation.